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10/518,720

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EXAMINER

PAUL, DISLER

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/518,720 | Applicant(s) SCHAEFFER ET AL. | |
| | Examiner DISLER PAUL | Art Unit 2614 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/9/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment with respect to claim 1, have been considered but are moot in view of the new ground(s) of rejection. Eichler et al. (US 2003/0223602 A1).

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 4, 7-9, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Eichler et al. (US 2003/0223602 A1).

RE claim 1, Eichler et al. disclose of the spatialization system for at least one sound source creating for each source two spatialized monophonic channels (L, R) designed to be received by a listener, comprising: a filter database comprising a set of head-related transfer functions specific to the listener (fig.1 (116) ; par [0036]/database with specific individual HRTF model) , a data presentation processor receiving the information from each source and comprising in particular a module for computing the relative positions of the sources in relation to the listener (fig.1 (110); par [0042]), a head-related transfer functions selection module with a variable resolution suited to the relative position of the source in relation to the listener (fig.1; par [0046]/appropriate HRTF in regard to source and listener); computation unit for computing said monophonic channels by convolution of each sound source with head-related transfer functions of said database estimated at said source position, without a spatial interpolation of the head-related transfer functions (par [0046, 0061,

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0056]/appropriate HRTF is determined for source position; fig.1 (118) fig.5).

RE claim 4, the spatialization system as claimed in claim 1, wherein it comprising a sound database including in digital form a monophonic sound signal characteristic of each source to be spatialized, this sound signal being designed to be convoluted with the selected head-related transfer functions (fig.5; par [0038-0039,0042-0043]).

Re claim 7, Nakazawa disclose of the spatialization system as claimed in claim 1, wherein it comprises an input/output audio conditioning module which retrieves at the output the spatialized monophonic channels to format them before sending them to the listener fig.5; fig.1 (120); the audio spatialized is received and output and formatted to be reproduced by respective channel).

Re claim 8, the spatialization system as claimed in claim 7, wherein since live communications have to be spatialized, these communications are formatted by the conditioning module so they can be spatialized by the computation unit (fig.5; par [0033-0033; 0062]/also live communication is spatialized).

Re claim 9, the sound spatialization system as claimed in claim 1, wherein the computation unit comprises a processor interface linked with the data presentation unit and a computer for generating

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spatialized monophonic channels (fig.1 /(110,106,118); par [0040-0042, 0040])).

Re claim 17, an integrated modular avionics system comprising a high speed bus to which is connected the sound spatialization system as claimed in claim 1 via the data presentation processor (fig.1 (106); par [0039-0041]/path interface for sound and processor communication).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eichler et al. (US 2003/0223602 A1) and King et al. (US 2003/0035555 A1).

Re claim 11, the spatialization system as claimed in claim 9, But, Eichler et al. fail to disclose of wherein the computer is implemented by an EPLD type programmable component.

But, King et al. disclose of the specific wherein a computer is implemented by an EPLD type programmable component (par [0029]). Thus,

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taking the combined teaching of Eichler et al. and King et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Eichler et al. with the computer is implemented by an EPLD type programmable component for enabling the configuring and execution of program code.

6. Claims 10; 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichler et al. (US 2003/0223602 A1) and Nakazawa (US 5,715,317).

Re claim 10, the sound spatialization system as claimed in claim 9, But, Eichler et al. fail to disclose of the specific wherein since the system comprises a sound database, the processor interface comprises buffer registers for the transfer functions from the filter database and the sounds from the sound database. But, Nakazawa disclose of a similar system wherein the system comprises a sound database, the processor interface comprises buffer registers for the transfer functions from the filter database and the sounds from the sound database (fig.1,13-14; col.7 line 5-40; col.9 line 5-45/storing of Hrtf and sound).

Thus, taking the combined teaching of Eichler et al. and Nakazawa as a whole, it would have been obvious for one of the ordinary skill in the art to have modified Eichler et al. with the a sound database,

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the processor interface comprises buffer registers for the transfer functions from the filter database and the sounds from the sound database for providing sound image localization at arbitrary location.

Re claim 19, the spatialization system as claimed in claim 10, the computer comprises a dual spatialization module which receives the appropriate transfer functions and performs the convolution with the monophonic signal to be spatialized(see claim 13 rejection analysis).

7. Claims 2-3, 5-6, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichler et al. (US 2003/0223602 A1).

Re claim 3, the spatialization system as claimed in claim 1 with the coefficients for the head related transfer function (fig.5), But, Eichler et al. fail to disclose of the specific wherein the exact value of the coefficient is approximately 40. But, it is noted that the concept of having a coefficient being approximately 40 is simply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art to have modify Eichler et al. with the same concept wherein having the exact value of the coefficient is

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approximately 40 for creating sound spatialization in the virtual environment.

Re claim 2, the spatialization system as claimed in claim 1 with the head related function in the database, (fig.5). But, Eichler et al. fail to disclose of the specific wherein such a plurality of dimensions of elevation and azimuth including the 7.degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. But, it is noted that the concept of having head related function collected at such .degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. is simply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art to have modify Eichler et al. with the specific wherein the optional of 7.degree. intervals in azimuth, from 0 to 360.degree., and at 10.degree. intervals in elevation, from -70.degree. to +90.degree. for purpose of enabling the user to sense phantoms speakers in virtual environment.

Re claim 5, Eichler et al. disclose of the sound spatialization system as claimed in claim 4, wherein the data presentation processor comprises a sound selection module linked to the sound database to be spatialized (fig.1 (110,102); par [0049]), but, Eichler et al. fail to disclose of the having the prioritizing between the concomitant sound sources to be spatialized. But, it is noted that the concept of

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having the prioritizing between the concomitant sound sources to be spatialized is simply the designer's preference, thus it would have been obvious for one of the ordinary skill in the art to have modify Eichler et al. with the similar concept of having the prioritizing between the concomitant sound sources to be spatialized for optimally computing spatialized sound for the user.

Re claim 6, the sound spatialization system as claimed in claim 5, wherein the data presentation processor comprises a configuration and programming module to which is linked the sound selection module (par [0049]; fig.1/data processor and configured sound module), and in which are stored customization criteria specific to the listener (par [0036])/with personal head sensor for head related function customized).

Re claim 13, the spatialization system as claimed in claim 9 which receives the appropriate transfer functions and performs the convolution with the monophonic signal to be spatialized (fig.5); but, Eichler et al. fail to disclose of wherein the computer comprises a dual spatialization module. But, it is noted that the concept of wherein the computer comprises a dual spatialization module is simply the designer's need with no unexpected result, thus it would have been obvious for one of the ordinary skill in the art to have modify Eichler et al. with the concept of wherein the computer comprises a

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dual spatialization module for optimally computing spatialized sound for the user.

Re claim 14, Eichler et al. disclose of the spatialization system as claimed in claim 9 , But, Eichler et al. fail to disclose of the specific of wherein the computer comprises a soft switching module implemented by a dual linear weighting ramp. But, official notice is taken the concept of having the specific wherein the switching module implemented by a dual linear weighting ramp is well known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify Eichler et al. with the switching module implemented by a dual linear weighting ramp for optimizing the matching process for implementing the virtual opening ear sensation.

8. Claim 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eichler et al. (US 2003/0223602 A1) and Shennib et al. (US 5,645,074).

Re claim 15, the spatialization system as claimed in claim 9, But, Eichler et al. fail to disclose of the specific wherein being an atmospheric absorption simulation module. But, Shennib et al. disclose of a system wherein having an atmospheric absorption simulation module (col.15 line 25-32, 50-60) for purpose of creating signals that are representative of real environment in three dimensional-states. Thus, taking the combined teaching of Eichler et al. and Shennib et al. as a whole, it would have been obvious for one of the ordinary

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skill in the art to have modify Shennib et al. with the atmospheric absorption simulation module for purpose of creating signals that are representative of real environment in three dimensional-states.

Re claim 20, has been analyzed and rejected with respect to claim 15.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eichler et al. (US 2003/0223602 A1) and Park et al. (US 5,930, 733).

Re claim 16, the spatialization system as claimed in claim 9, but, **Eichler et al.** fail to disclose of wherein the computer comprises a dynamic range weighting module and a summation module to obtain the weighted sum of the channels of each track and provide a single stereophonic signal. But, Park et al. disclose of a system wherein similar concept of having the computer comprises a dynamic range weighting module and a summation module to obtain the weighted sum of the channels of each track and provide a single stereophonic signal (fig.2, 5; col.8 line 5-17; col.12 line 50-65) for purpose of accurately retrieving 3-D sound resembling the original signals. Thus, taking the combined teaching of **Eichler et al.** and Park et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modify **Eichler et al.** with the having the computer comprises a dynamic range weighting module and a summation module to obtain the weighted sum of the channels of each track and provide a single stereophonic

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signal for purpose of accurately retrieving 3-D sound resembling the original signals.

The combined teaching of **Eichler et al.** and Park et al. as a whole, disclose of the single stereophonic signal being compatible with the output dynamic range (Park, col.1 line 39-43; col.6 line 10-17/reproduced as original).

10. Claims 12, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Eichler et al.** (US 2003/0223602 A1) and **Hinde** (US 7,190,794).

Re claim 12, the spatialization system as claimed in claim 10, But, **Eichler et al.** fail to disclose of the specific wherein the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database. But, **Hinde** disclose of a system wherein similar concept of wherein the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database (col.7 line 50-col.8 line 20; col.8 line 37-50; col. 14 line 35-45) for the purpose of providing the user with real world experience as by sensory cues for enhancing results. Thus, taking the combined teaching of **Eichler et al.** and **Hinde** as a whole, it would have been obvious for one of the

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ordinary skill in the art to have modify Eichler et al. with the computer comprises a source activation and selection module, performing the mixing function between live communications and the sounds from the sound database for the purpose of providing the user with real world experience as by sensory cues for enhancing results.

Re claim 18 has been analyzed and rejected with respect to claim 12.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISLER PAUL whose telephone number is (571)270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614